

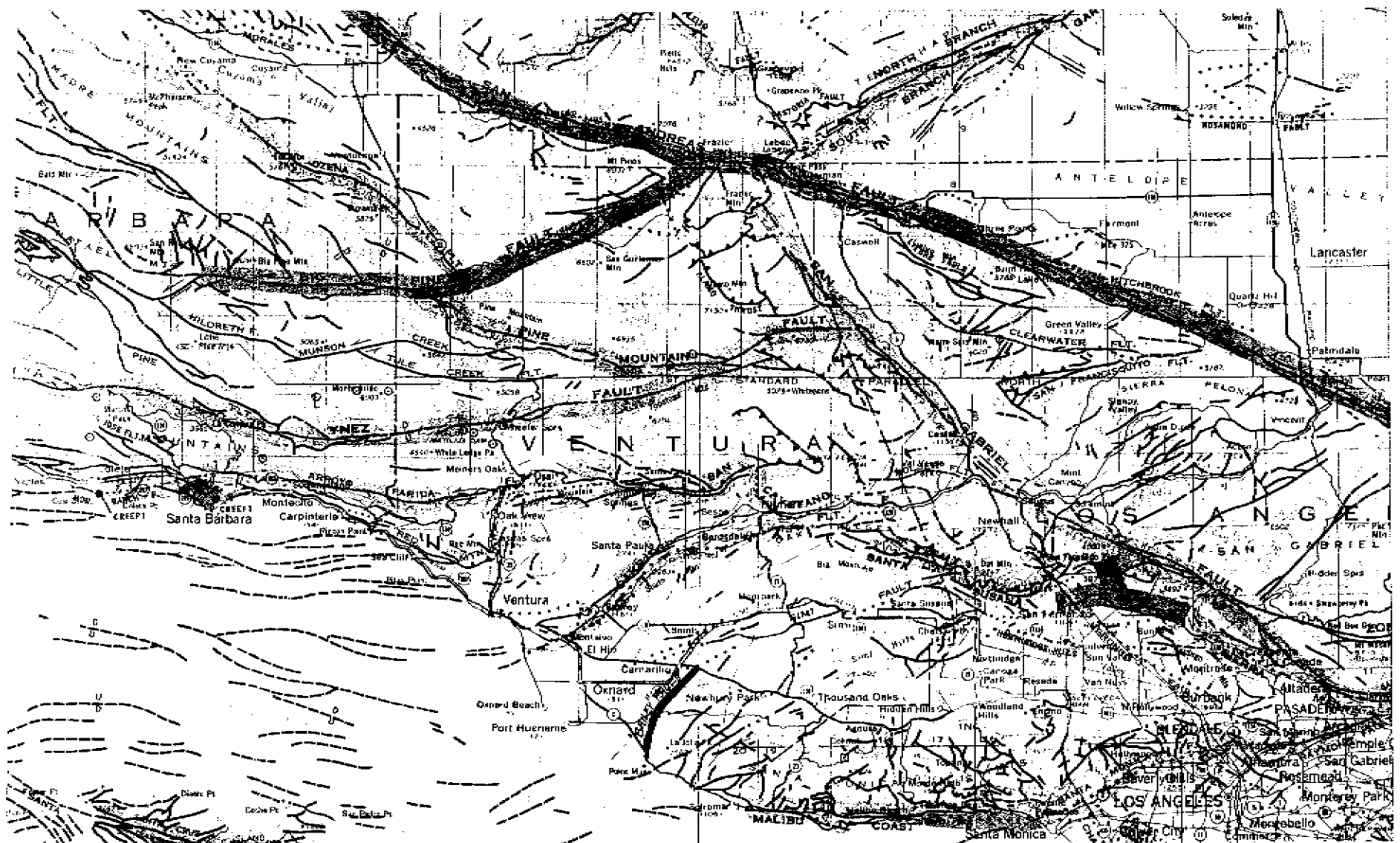
CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-55

June 9, 1977

1. Name of fault: Bailey fault.
2. Location of fault: Point Mugu, Camarillo, and Newbury Park 7.5 minute quadrangles, Ventura County (*see figure 1*).
3. Reason for evaluation: Part of a ten-year program.
4. List of references:
 - a) Azmon, Emanuel, 1956, Geology of Point Mugu quadrangle: Unpublished M.A. thesis, University of California, Los Angeles, map scale 1:24,000.
 - b) Gamble, J.H., 1957, Geology of the Point Mugu and Camarillo quadrangles, Ventura County, California: Unpublished M.A. thesis, University of California, Los Angeles, map scale 1:12,000.
 - c) Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map no. 1, scale 1:750,000.
 - d) Mukae, M.M. and Turner, J.M., 1975, Ventura County water resources management study, geologic formations, structures and history in the Santa Clara-Calleguas area in Compilations of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-28, 2 plates.

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 FIGURE 1. General location of the "Bailey"
 fault (Jennings, 1975, scale 1:750,000).



- e) Page, R.W., 1963, Geology and ground water appraisal of the Naval Air Missile Test Center area Point Mugu, California: U.S. Geological Survey Water-Supply Paper 1619-S, 40 p., pl. 1, map scale 1:31,680.
- f) Turner, J.M., 1975, Ventura County water resources management study, aquifer delineation in the Oxnard-Calleguas area, Ventura County in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-45, 10 plates.
- g) Turner, J.M. and Mukae, M.M., 1975, Ventura County water resources study, effective base of freshwater reservoir in the Oxnard-Calleguas area in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-15, 1 plate.
- h) Weber, F.H., Jr., Cleveland, G.B., Kahle, J.E., Kiessling, E.F., Miller, R.V., Mills, M.F., Morton, D.M., and Cilweck, B.A., 1973, Geology and Mineral resources study of southern Ventura County, California: California Division of Mines and Geology, Preliminary Report 14, 102 p., 5 pl., 9 figures, map scale 1:48,000
- i) Weber, F.H., Jr., Kiessling, E.W., Sprotte, E.C., Johnson, J.A., Sherburne, R.W., and Cleveland, G.B., 1975, Seismic hazards study of Ventura County, California: California Division of Mines and Geology, Open File Report 76-5LA, 396 p., 9 pl., map scale 1:48,000.

- j) Ziony, J.E., Wentworth, C.M., Buchanan-Banks, J.M., and Wagner, H.C., 1974, Preliminary map showing recency of faulting in coastal southern California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-585, 15 p., 3 plates, map scale 1:750,000.

5. Summary of available data:

The Bailey fault is mapped as a single subsurface trace by various authors (see plate 1). Unfortunately, there is some disagreement on the exact location of this trace. Turner and Mukae (1975, p. 13) described the fault as ~~actually~~ a zone of two or three traces, however (plate 1, their report), they show only one trace on their map.

While Azmon (1956) depicted the Bailey fault (he called it the Point Mugu fault) as a left-lateral, strike slip fault, most authors (Page, 1963; Mukae and Turner, 1975; Turner, 1975; Turner and Mukai, 1975; Weber, et al., 1975) feel that the fault is a steeply dipping, normal or vertical fault along which the ^{western} ~~eastern~~ block is always down-dropped with respect to the ^{eastern} ~~western~~ block.

Most authors (Page, 1963; Turner, 1975; Turner and Mukae, 1975; Mukae and Turner, 1975) conclude that the fault cuts the San Pedro Formation (lower Pleistocene). Page (1963, plate 2) depicts the Bailey fault as not affecting the upper 800 feet of sediment, which includes part of the Santa Barbara Formation (lower Pleistocene). Mukae and Turner (1975, p. 19) think that the Bailey fault is a definite barrier to ground water movement, based on a steep gradient and slight differences in ground water quality, especially chloride concentrations.

They state (Turner and Mukae, 1975, p. 13) that the base of the ground-water table (base of the San Pedro Formation), is displaced vertically 200 to 300 feet. They depict the fault, however, (Mukae and Turner, 1975, plate 1), as not cutting several hundred feet of Quaternary alluvium.

(Note: this cross-section does not show any Santa Barbara Formation to be present). Weber, et al. (1975, p. 175) interpreted this data as an indication that "mid-late Quaternary sediments" were not displaced by the southwestern part of the fault, but that late Quaternary ground-water-bearing sediments are displaced along the northeastern part of the fault. Ziony, et al. (1974) depict the fault as cutting early Pleistocene deposits and thus ^{concluded that} ~~felt~~ the fault was Quaternary in age. They evidently had no data on the age of units not affected. No fault related topography was noted by Ziony, et al, nor ^{by} any other authors already mentioned.

6. Interpretation of air photos: Not attempted.

7. Field observations: Not attempted.

8. Conclusions:

It would appear that the Bailey fault is definitely a Quaternary fault, but just precisely when the fault last moved cannot be determined. It would appear that faulting ceased along the Bailey fault at least by the middle to late Pleistocene. No evidence of Holocene fault displacement is available, and the precise location of the fault has not been effectively demonstrated.

9. Recommendations:

Based on the information noted above, and the present project guidelines, zoning of the Bailey fault is not recommended at this time. No further work on the part of this project's personnel appears necessary at this time.

10. Investigating geologist's name; date:

Theodore C. Smith
THEODORE C. SMITH
Assistant Geologist
June 9, 1977

*I agree with
recommendations.
Elt
6/15/77*